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ABSTRACT

This is the sixth year that an attempt has been made to bring together information of interest to deans of engineering for use in planning. Special attention has been focused on direct instructional costs, nonacademic personnel costs, regular nonsalaried operational costs, space rations, and student-faculty ratios. Only general comparisons for the two years 1969-70 and 1972-73 are reported. Some of the data reported include: enrollments, student semester credit hours, degrees awarded, and instructional costs. It is apparent from the data that inflation has taken its toll. It is also apparent that the drop in engineering enrollment has been at a faster pace than the reduction in the faculty, which results in a better student-faculty ratio and contributes to the increase in cost per unit. The data from the 20 institutions reporting for 1972-73 is contained in tables at the end of the report. (Author/PG)

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Planning Factors in Engineering Education

a study for the

Administrative Unit, Southeastern Section
American Society for Engineering Education

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This is the sixth year that an attempt has been made to bring together information of interest to deans of engineering for their use in planning. Special attention has been focused on direct instructional costs, nonacademic personnel costs, regular nonsalaried operational costs, space ratios and student-faculty ratios. It would be desirable to develop data in such a way that trends over the past several years could be shown. This has turned out to be very difficult and, as a result, only general comparisons for the two years, 1969-70 and 1972-73, are reported. It is apparent that there are many differences in the way in which engineering units are organized and in the activities that are included within these units. There are also substantial differences in the accounting systems employed by different universities with some of them being much more sophisticated than others. We believe these reasons contributed to certain inconsistencies in the data from one institution to another and from one year to another. The only practical solution would be personal visits or careful follow-ups, both beyond the scope of the time and resources available for this study. It is probable that

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through agencies such as NCHEMS and central state planning groups (Boards of Control or Coordinating Boards) data may be available on a university-wide basis within the next few years. In the meantime, we hope what is presented here may prove useful.

The tables at the end report the 1972-73 data as reported to us for the following schools:

*Alabama, University of
Alabama, University of - Birmingham
Alabama, University of - Huntsville
Alabama, University of - South Alabama
*Auburn University
*Christian Brothers College
*Clemson University
*Duke University
*Florida, University of
*Georgia Institute of Technology
*Kentucky, University of
*Miami, University of
*North Carolina State University at Raleigh
North Carolina, University of - Charlotte
*Tennessee, University of
Tuskegee Institute
Vanderbilt University
*Virginia Military Institute
*Virginia Polytechnic Institute and State University
*Virginia, University of

Some of these institutions reported data for one year, some for two, and some for three years. There were 14 that reported data for both the 1969-70 and the 1972-73 years.

The following table contains some numerical comparisons for the two years, 1969-70 and 1972-73. The two columns on the left contain figures for all of the institutions that reported in either of the two years. The two columns on the right contain data for the fourteen institutions that reported both of the two years.

*Reported data for 1969-70 and 1972-73

Planning Factors in Engineering Education
Some Comparisons

	All Institutions		Fourteen Institutions	
	1969-70 n=18	1972-73 n=20	1969-70 n=14	1972-73 n=14
Enrollments, Average				
Undergraduate	1416	1079	1622	1366
Graduate	247	229	279	213
Student Semester Credit Hours Taught, Average				
Undergraduate	22,600	15,200	26,500	19,300
Graduate	3,800	2,800	4,900	4,300
Degrees Awardei, Average				
Bachelors	281	225	331	294
Masters	* 59	* 51	** 78	** 78
Doctorates	*** 16	+ 14	++ 20	++ 19
Full-Time Equivalent Students, Average				
Undergraduate	754	507	886	644
Graduate	190	153	225	200
TOTAL	944	660	1111	844
Space - Per F.T.E. Student, Average	153	152	182	204
Full-Time Equivalent Faculty, Average	93	86	109	111
Instructional Costs (K$), Total				
Teaching	23,509	27,006	21,469	24,307
Nonacademic	3,801	6,471	3,474	6,039
Nonsalaried Operational	1,823	3,724	1,681	3,238
Equipment	2,505	1,605	2,314	1,470
Student-Faculty Ratio, Average	9.8	6.7	9.8	6.6
Teaching Load (SCH), Average	274	225	276	225
Total Instructional Costs-Dollars per SCH produced, Average	72.7	106.0	73.8	108.2
Total Instructional Costs - $ per FTE Student, Average	2,040	2,920	2,080	2,960

*4 granted none
**2 granted none
***5 granted none
+8 granted none
++3 granted none

It is apparent from the above figures that inflation has taken its toll. It is also apparent that the drop in engineering enrollment has been at a faster pace than the reduction in the faculty resulting in a better student-faculty ratio and contributing to the increase in costs per unit.

It was noted earlier that the data from the twenty institutions reporting for 1972-73 is contained in the tables at the end of this report. It might be useful for those working with this data to refer to the definitions made available at the time of the collection of the data.

Comments, questions or requests for additional information may be referred to either of the authors.

February 1974

PLANNING FACTORS IN ENGINEERING EDUCATION
COLUMN HEADINGS CORRESPOND TO DEFINITION CODING

YEAR: July 1, 1972 - June 30, 1973

Institution Code	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
	Faculty and Related Staff (F.T.E.)							Faculty and Related Staff Costs in Thousand Dollars - ($K)								
								Instruction		Research Faculty		Research Assistants			Nonacademic	
	Instructional	T.A.	Research	R.A.	Extension	Technicians	Clerical	Faculty	T.A.	Internal	External	Internal	External	Extension	Technicians	Clerical
C	18.6	0	0	0	0	2.0	3.5	268	0	0	0	0	0	0	18	17
D	13.5	0	0	0	0	2.0	1.0	155	0	0	0	0	0	0	13	5
E	47.0	6.5	37.5	49.5	1.0	29.0	28.0	816	38	533	112	106	208	28	267	158
I	141.0	32.2	55.1	83.9	0	95.0	112.0	2,669	339	262	1,070	140	145	0	624	779
J	101.0	7.0	22.0	68.3	7.0	31.5	36.5	1,763	35	189	153	136	155	85	257	200
K	115.5	18.3	28.8	40.8	0	32.5	30.6	1,794	132	0	423	0	338	0	210	156
L	97.8	13.3	23.7	19.4	2.0	23.0	35.0	1,500	100	126	322	59	97	35	185	176
M	36.6	33.0	7.9	30.0	0	14.0	11.0	648	120	0	184	0	129	0	75	49
N	99.0	3.9	21.0	17.4	0	19.0	21.4	1,819	59	14	315	35	176	0	192	125
O	74.5	0.6	6.2	7.5	9.5	9.0	22.0	1,043	5	0	65	15	33	154	91	112
P	148.1	93.0	16.1	40.3	18.9	33.0	61.2	2,568	187	231	183	22	220	298	339	376
Q	222.0	32.0	96.0	53.0	0	40.0	80.0	4,292	384	862	1,153	309	327	0	360	611
R	152.0	49.0	32.0	37.0	4.0	31.0	39.0	2,562	318	61	553	30	266	73	298	199
S	42.8	3.5	8.0	12.5	0	9.0	10.5	683	10	0	153	60	43	0	77	70
U	14.0	0	0.5	0	0.7	1.0	3.0	212	0	0	10	0	0	16	7	17
W	12.0	0	0.3	0	0	0	1.3	159	0	0	5	0	0	0	0	7
X	30.5	2.5	4.0	20.0	0	8.0	9.0	405	32	0	86	0	213	0	95	43
Y	51.0	13.0	8.0	5.0	0	7.0	19.0	889	46	28	114	9	45	0	64	116
AB	25.0	0	0	1.0	0	2.0	3.0	361	0	2	1	0	2	4	19	18
AC	16.5	5.0	1.5	1.0	0	2.0	5.0	534	61	0	0	0	6	0	14	32

PLANNING FACTORS IN ENGINEERING EDUCATION
COLUMN HEADINGS CORRESPOND TO DEFINITION CODING

INSTITUTION: All Reporting YEAR: July 1, 1972 - June 30, 1973

	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
Institution Code	Fall Enrollment 1972		Student Credit Hours		Degrees Granted Between July 1, 1972 June 30, 1973			Nonsalaried Operation		Lab Equipment		Net Space Ft.^{2}
	UG	G	SCHUG	SCHG	B.S.	MAST.	DOCT.	Institut. $K	Research $K	Institut. Fund $K	Outside Funds $K	
C	335	0	5,113	0	59	0	0	60.6	0	13.3	4.0	63,358
D	240	0	3,842	0	45	0	0	18.0	11.0	15.0	10.0	30,976
E	985	191	22,744	2,771	192	54	15	167	0	97	24	129,440
I	843*	555	21,500*	12,800	356	72	47	609	743	369	232	352,571
J	1,058	205	18,377	2,957	236	63	16	356	68	42	37	263,000
K	1,737	600	28,328	6,188	401	117	24	230	171	145	93	185,000
L	1,824	130	30,576	1,589	489	46	12	191	46	108	63	208,000
M	483	104	7,072	1,326	95	26	8	103	0	0	131	82,910
N	917	316	20,839	5,323	165	77	30	350	143	148	86	191,609
O	676	98	6,943	568	154	49	8	97	26	103	19	196,000
P	2,718	386	18,016	2,303	651	110	47	112	9	46	146	293,400
Q	4,590	1,195	23,541	5,479	664	153	35	240	432	137	106	589,000
R	2,260	371	42,300	7,700	487	134	30	662	984	210	212	204,000
S	464	112	12,184	1,375	123	35	0	42	712	37	See Y	68,000
U	434	28	4,000	209	44	6	0	13	5	15	3	22,000
W	323	0	2,970	0	49	0	0	7	0	0	3	7,200
X	246	137	3,550	1,174	36	15	0	26	0	45	0	19,680
Y	779	128	13,759	1,064	165	45	10	379	71	43	36	76,000
AB	410	0	5,460	0	78	0	0	13	2	16	40	21,600
AC	260	25	3,800	400	27	11	0	48	47	16	9	36,000

*Freshmen and Sophomores Excluded